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Efficiency of Irish Industrial Establishments

Part I.

by

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The basic problem of the day is: what are Irish industries' prospects of survival under EEC conditions? T. P. Linehan's recent paper[1], in showing an unexpectedly wide range in the distribution of the statistic net output per head for establishments within each industrial group, suggests that the answer to the question is to be sought at the establishment rather than at the industry level, though it is no doubt true that some industries on average are more likely to be competitive than others. Some kind of answer should transpire from an examination of the records for individual establishments.

We would, of course, like to be able to state from the existing records that, within a given industry, establishment A is safe, B is doubtful and C will be irretrievably wiped out. A moment's reflection will show, however, that such clear-cut answers cannot emerge, even if the records were all that one could desire. In the first place, and very important, is the fact that one can never tell in advance what reserves of energy and ingenuity are latent in the firm (as in the individual) when faced with a critical or even merely a difficult situation. Secondly, the establishment may not coincide with the enterprise, in that there may be more than one establishment in the enterprise with good reasons for an efficient enterprise to maintain relatively inefficient establishment; and of course there may be arbitrary elements in the statistics for such an establishment. It may be well to bear this point in mind in the analysis which follows based exclusively on the establishment.

The present paper merely outlines a project of inquiry based on the records of the Census of Industrial Production, 1958. The detailed records for a particular industry were examined to find out how far these can be used to supply data which will throw some light on the answer to the main question. The industry selected was No. 12 - Manufacture of Cocoa, Chocolate and Sugar Confectionery. In 1938 there were 48 establishments included in the Census but from the Tabulator Listing supplied by CSO it appeared that, by reference to both

average number engaged and net output, 13 of these would be omitted as small. Particulars with regard to these are, however, given in Table 1 below.

Before examining the establishments individually it seemed expedient to endeavour to study the relationship between size of firm and efficiency, however measured. To overcome the familiar difficulty of bias[2] in relation to derived statistics like net output per person engaged, value of materials less cost of fuel etc was used as a "classifier" (or "instrumental variable") as being algebraically independent of the prime variables under consideration, namely number engaged, fuel etc, wages and salaries and net output. As cols.(2) and (3) of Table 1 show, the classifier used successfully arrays the establishments by size whether this is adjudged by number engaged or by average net output.

Six size groups are distinguished. The dividing point between each group was determined as that providing a distinct jump in the value of the classifier. In average size the groups range from 23 to 644 persons per establishment. It may also be inferred, by reference to the net output column, that the two largest size groups account for 72% of the industry.

In his paper on international comparability, E. T. Nevin[3] has indicated why net output per person engaged is an inadequate measure of relative efficiency. If with lesser force for establishments within an industry in a particular country, some of Nevin's objections to this measure can also apply, in particular because the measure requires to be corrected for different degrees of capital utilisation. Also, of course, net output itself is not necessarily a correct measure of the economic importance of an industry or an establishment. It is better than gross output but less good than added value or net factor income, the sum of employee compensation and net profit (i.e. net of depreciation). In the next paper in this series discussion of the added value aspect will be resumed. For the present it will be assumed that net output behaves proportionately as if it were added value. Furthermore, expenditure on fuel etc will be treated as if it were a measure of capital utilisation, an hypothesis which will also be examined later.

If net output be a measure of added value then, proportionately at any rate, remainder of net output (i.e. net output less employee compensation) is a measure of reward to capital. If this be accepted we can for the industry as a whole evolve a statistic R which represents remainder of net output per £ fuel etc. For the Industry (35 establishments) as a whole

$$R = 5.466528.$$

For each industrial size group (or individual establishment) we can then calculate an "expected" net output N_i' as

$$N_i' = W_i + RF_i,$$

where W_i is wages and salaries and F_i is cost of fuel etc for the ith group. Then if V_i be termed the "relative viability" of the ith group, set

$$V_i = 100N_i/N_i',$$

where N_i is the actual net output of the group. For the Industry as a whole the relative viability is, of course, 100.

To illustrate the calculation and the implication of the notion of relative viability, consider the following data for an imaginery establishment:-

Gross output	£30,000
Materials etc	£17,000
Net output	£13,000
Wages and salaries	£10,000
Remainder of net output .	£ 3,000
Average number engaged ..	30
Fuel etc	£800

Then (giving the establishment the serial number i)

$N_i' = 10,000 + 5.466528 \times 800 = 14,373$

N_i = net output (above) = 13,000

V_i = relative viability = $100N_i/N_i' = 90.4$

The basic idea in viability, due essentially to E. T. Nevin[3], is that of "spare fat" in the industry or in the establishment: ideally this "fat" is net profit in relation to value of capital invested though, for the present, we must be content with Remainder of net output as a measure of this; in a subsequent paper the more precise measure will be estimated and examined. Suppose that under EEC conditions price of product (or gross output) in net effect after allowing for reduction in price of materials is equivalent to a fall of 5%, or from the foregoing figures, by €1,500. Assuming that average wages and salary level, employment and expenditure on fuel etc are maintained and that the industrialist uses the pre-EEC norm for profitability, N_i' remains unchanged but now

$$N_i = 13,000 - 1,500 = 11,500,$$

so that post-EEC value of V_i is 82.5 (= 100 x 12,391/15,018), representing a considerably greater fall (from 92,8 to 82.5 or by 11%) than the 5% postulated for price of product.

Now it seems desirable to distinguish between the notions of <u>viability</u> and <u>productivity</u>. Just as in the case of individual persons, an enterprise may be viable if it employs cheap labour and/or if it is prepared to tolerate a low rate of profit: in a certain degree the two coincide. In such a case, however, the labour productivity will be low. We may evolve a measure of relative productivity P_i using the following formula

$$P_i = 100N_i/N_i'',$$

where N_i'' is given by

$$N_i'' = SL_i + RF_i,$$

S being the average compensation per head for the Industry (35 establishments) and L_i the number of persons engaged. In fact,

$$S = €362.1468$$

for Industry 12. As in the case of V_i, P_i = 100 for the Industry as a whole. Of course, P_i is purely a technical coefficient, with little reality, as envisaging an

"expected" net output N" with all employees having the same average compensation whereas (see Table 2, col.(3)) this compensation ranges from £199 for small firms to £405 for the largest group.

It would be socially desirable to raise the wage and profit rates in every establishment but such an aspiration is far removed from the reality. Firms, like individuals, survive <u>because</u> they are prepared to accept differential rewards. If it be true that differences in size (number engaged) account for the greater part of differences in net output or added value, rewards per unit of labour or capital also have a considerable differential effect.

Table 1. Particulars for Industry No. 12, 1958, Classified in Six Size Groups
(Note: size classifier is cost of materials other than fuel etc)

Size group	Average size based on -		Establishments	Persons	Net output	Wages & salaries	Remainder	Fuel etc
	No.	Net output						
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
	No.	£000	No.	No.	£000	£000	£000	£000
I	22.8	11.7	11	251	128.9	66.2	62.7	11.3
II	32.0	18.7	6	192	112.2	63.9	48.3	9.9
III	66.7	39.5	6	400	237.3	131.6	105.7	17.7
IV	160.8	62.1	5	804	310.6	246.2	64.3	37.9
V	219.3	145.7	4	877	582.9	322.7	260.2	36.7
VI	644.0	502.5	3	1,932	1,507.4	783.2	724.3	119.8
Total above	127.3	82.3	35	4,456	2,879.2	1,613.7	1,265.5	231.5
Small concerns	6.2	2.1	13	80	27.3	15.9	11.4	2.9
Industry	94.5	60.6	48	4,536	2,906.5	1,629.7	1,276.8	234.4

Source: Census of Industrial Production Returns, 1958.

The object of Tables 1 and 2 is to try to determine, in the simplest manner, some <u>general</u> effects such as size and degree of capitalisation (as measured, perhaps crudely, by cost of fuel etc) on output and relative efficiency. The figures in cols.(2) and (3) of Table 1 indicate the approximate average size of establishment in each group; from the figures in cols.(4) or (5) in relation to the total the relative importance of each group may be assessed. Attention may be directed at once to the

anomalous situation of Group IV of 5 establishments in which employee compensation forms no less than 79% of net output compared with the general average (35 establishments) of 56%, or 21% and 44% respectively for remainder of net output; the latter percentage is an excellent indication of relative viability.

Table 2. Statistics Derived from Table 1.

Size group(i)	Per person engaged			Viability V_i	Productivity	
	Net output	Wages & Salaries	Fuel etc		Total P_i	Labour
(1)	(2)	(3)	(4)	(5)	(6)	(7)
	£	£	£			
I	513.4	263.6	44.9	100.8	84.5	79.5
II	584.2	332.8	47.0	99.1	106.0	90.4
III	593.1	329.0	44.3	103.8	98.1	91.8
IV	386.3	306.3	46.0	69.2	62.9	59.8
V	664.7	368.0	41.8	111.4	114.4	102.9
VI	780.2	405.4	62.0	119.6	111.3	120.8
Total above	646.1	362.1	52.0	100	100	100
Small Concerns	341.3	199.3	36.9	85.1	58.5	52.8
Industry	640.8	359.3	51.7	99.8	99.3	99.2

Ignoring the dismal showing of Group IV the tendency for net output and employee compensation to grow with size of establishment will be noted from Table 2. Even apart from Group IV, however, the growth is not regular: thus for sizes (number engaged) of about 20-100, a substantial range, output per person and employee compensation shows no tendency to increase. The increased levels in the two largest size groups are, however, unmistakable.

From col.(4) of Table 2 it will be noted that, except for Group VI, cost of fuel etc per employee, or, by definition, capital applied per employee, is remarkably constant. Increased use of capital in relation to labour is apparent only in the group of three large concerns which, as Table 1 shows, account for over one-half of the net output of the Industry. As regards relative viability, the precession with size of firm is not very marked in that the three smallest groups are near average. There is a

distinct contrast between relative viability and productivity in Group I (cols.(5) and (6) of Table 2) with viability a little above average and total productivity much below average, pointing the useful lesson that the strength of some establishments is due simply to the fact that their personel is prepared to work for relatively small rewards. This kind of toughness and the fact that most small establishments probably work for special customers (whose loyalty overcomes any propensity to buy in the best market) may ensure their survival. The contrast between the indexes in cols.(6) and (7) will be noted: col.(7) represents the figures in col.(2) reduced to the total for the 35 establishments as 100, recalling that net output is regarded as proportionately the same as added value. The productivity indexes P_i take capital utilisation into account: the indexes purport to represent proportionately output per unit of factor (labour and capital combined) input.

The considerable degree of consistency and regularity appearing in Table 2 even when the number of establishments included in each group is small, disappears when the ideas of relative viability and productivity are applied at the individual establishment level. In Tables 3 and 4 establishments are arranged according to relative viability: as col.(2) of Table 4 shows, the 35 establishments range in viability from 19 to 211! As col.(6) of Table 4 indicates, there is no simple relation between viability and size. The most efficient and the least efficient firms are on average about the same size. Comparing cols. (3) and (4) it will be observed that, at the individual establishment level, there is a high correlation between viability and total productivity.

Table 4 raises in an acute form the question of how many of the firms in the Industry manage to survive, even as matters stand. Economic theory recognises imperfect competition but it is doubtful if any theorist could have contemplated such imperfection as these figures reveal. As will be observed one establishment has a viability index of 19. It is quite large and rejoices in an employee compensation bill nearly twice as large as its net output, pointing to a very substantial loss in the year 1958. The second worst establishment is very small but also shows a substantial loss. At the other end of

Table 3. Particulars for Establishments in Industry 12, Classified According to Viability

Viability Group (1)	Establishments (2)	Persons (3)	Net output (4)	Wages & Salaries (5)	Remainder N. Output (6)
	No.	No.	£000	£000	£000
1	4	248	69.8	78.8	-9.0
2	6	368	159.0	108.8	50.2
3	7	903	485.8	327.8	158.0
4	5	815	358.4	265.7	92.8
5	6	1,668	1,385.5	670.0	715.5
6	7	454	420.6	162.6	258.0
Total	35	4,456	2,879.2	1,613.7	1,265.5

Table 4. Statistics Derived from Table 3.

Viability Group	Viability		Productivity		Persons per establishment	Persons engaged		W & S as % net output
	Range	Average V_i	Total P_i	Labour		Net Output	Wages & Salaries	
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
					No.	£	£	%
1	19- 69	37.4	35.4	43.6	62	282	318	113
2	74- 77	75.3	67.5	66.9	61	432	296	69
3	81- 89	82.1	82.2	83.3	129	538	363	68
4	93- 99	93.8	87.0	68.1	163	440	326	74
5	104-119	115.3	122.0	128.6	278	831	402	48
6	122-211	137.5	136.7	143.4	65	927	358	39
Total	19-211	100	100	100	127	646	362	56

the scale the two most viable establishments, with indexes over 200, are characterised by a very low wage bill in relation to net output, 24% and 37%, compared with the industry average of 56%. They are both small as regards numbers employed and the average earnings are £430 and £351 compared with the Industry average of £359.

Cols.(3)-(5) of Table 4 show that the viability and the two productivity indexes broadly tell the same story not only in direction but in relative magnitude. There are, however, vagaries: for instance there is a break in the regularity of increase at Group 4 for labour productivity; its relatively high rating in viability is seen

from col.(8) to be due to low compensation per head. This column also shows that there is no very decisive relationship between average compensation and viability. On the other hand, while the precission with viability is by no means regular, there can be no doubt from col.(9) about the relationship in general between viability and the proportion borne by wage-salary in net output.

As regards Industry 12, therefore, certain general inferences, cause-effect in character, can be drawn from the present analysis which, it should be emphasised, bears merely on comparisons of establishments with the industry. The relationships, e.g. between size and efficiency, pale into insignificance compared with the quite fantastic differences in efficiency, however measured, between establishments within each size group. It would be quite unsound to conclude, for this Industry, that, at present level of management competence, any substantial gain in efficiency is to be found in coagulation of small firms.

The following suggestions are made:-

(1) Tables on the lines of the four tables in this memorandum for each manufacturing industry should be produced by CSO. The author's work (single-handed since as a temporary Officer of Statistics under the Statistics Acts he was precluded from seeking collaboration within the Institute) was based on Tabulation Sheets supplied by CSO. From these sheets, with a small staff, the work would be very easy, although it will be necessary to establish viability indexes for each establishment separately.

(2) For establishments over a certain size by reference to both numbers engaged and net output, the returns for 1958 for establishments with a low viability rating should be examined for statistical reliability. If this proves to be well-founded the returns for the particular establishment for each of the years 1956, 1957, 1959 and 1960 should be scrutinized, to decide whether the bad showing in 1958 was exceptional or endemic. A similar procedure

should be adopted for a few establishments in each industry with a high viability index in 1958. It should be quite a simple matter to come to fairly definite conclusions on this important point.

(3) For (a) exceptionally low and (b) exceptionally high viability establishments and (c) a small random sample of the rest in each industry the returns should be scrutinized for evidence whether product-mix is responsible for differences in efficiency. The author surmises that such is not the case in any marked degree, but this, of course, remains to be seen. A "product-mix ratio" could be established for each establishment consisting of the ratio of the value of gross output of say two principal products (including with each product its necessary ancillanies, e.g. bran, pollard with flour) to total gross output. Specific calculations need not be made for each establishment: the ratio could be assigned to say 10 classes at sight. Other pecularities, whether statistically measurable or not might come to light on such scrutiny.

(4) It is for consideration whether, and how, the attention of individual managements should be directed to their shortcomings, including their viability ratings. It would be quite easy, if the foregoing suggestions are adopted, to issue confidentially to each such management (or perhaps to all managements) a statement based on its CIP returns 1956-60 showing (a) establishment's rating (b) average rating (c) best (or best group) rating. CSO will have to consider whether such action would be prejudicial to CIP. Action on these lines could be postponed until the CIP phase of this inquiry is completed - see below.

While the variability of efficiency revealed may seem alarming - as perhaps, at any rate in degree, it is - it would be wrong to conclude that the phenomenon of wide variability is confined to Ireland. The author is not aware of any studies on the lines of the present memorandum

for industries in other countries. He recalls, however, a conversation he had with a Dutch colleague some years ago to whom he was recounting his experience[4] with efficiency on farms in an Irish county, where it transpired that the effective range of output, given farm size, was uniformly 3:1. His Dutch friend said that he had noticed much the same range in Dutch industry. If the picture for Industry 12 in Ireland, which must force itself on one's mind after an examination of the figures, is of one whose members are contentedly jogging along behind a high tariff barrier in a live and let live spirit, the same is true, if in lesser degree, everywhere. Ireland might even be in an advantageous position in recognising the great range in quality of management and acting on the knowledge. There seems to be little doubt that most, if not all, firms in Industry 12 would benefit from competent industrial consultancy. Since there are so few sizable firms in manufacturing industry, action on these lines would be feasible and comparatively inexpensive.

The present memorandum deals only with comparative efficiency. A further memorandum, like this pilot in character, has begun with a view to establishing absolute levels of efficiency of Irish industrial concerns. This memorandum will not, however, be ready before mid-October 1962.

REFERENCES

(1) T. P. Linehan: "The Structure of Irish Industry", Statistical and Social Inquiry Society of Ireland, 18 May 1962.

(2) R. C. Geary and T. P. Linehan: "Paradoxes in Statistical Classification", Studi in Onore di Corrado Gini, Universita degli Studi di Roma, 1960.

(3) E. T. Nevin: "The Comparative Position of Irish Manufacturing Industry", E.R.I. Memorandum No. 2, May, 1962.

(4) R. C. Geary: "Variability in Agricultural Statistics on Small and Medium-sized Farms in an Irish County", Statistical and Social Inquiry Society of Ireland, 2November 1956.

CENTRAL STATISTICS OFFICE
DUBLIN 2.

CONFIDENTIAL

September 1962.

Dear Geary,

1. We have been examining your memorandum "Efficiency of Irish Industrial Establishments, Part I", which accompanied your letter of 29 August, 1962. We have not sent copies of it to the Department of Finance since we do not think that it is desirable to give circulation to a document which contains figures for individual establishments, even though it may not be possible to identify the establishment in question. I do not think that there is any necessity to have the numerical example which occurs at the bottom of page 3 based on data relating to one of the establishments - hypothetical figures would suffice. Furthermore, the quotation of the figure of £433 "for the largest establishment" in the fourth line of page 5 is, we think, unnecessary also. We would wish to see these points cleared up before the document gets wider circulation. It may be that we are over sensitive to questions of disclosure but you will appreciate the reasons for our care in this respect.

2. It is undoubtedly a fact that the crude indicator of net output per person engaged seems to point to a high degree of variability in "efficiency" at the individual establishment level. We agree that it is important to investigate this variation and to determine whether it is possible to show that efficiency is linked with other characteristics such as size, product mix etc. However, we have serious doubts as to whether or not the Census of Production records are adequate to provide material for efficiency measures for micro-analysis. These returns were never designed to provide such comparisons between individual establishments. As you are well aware the emphasis, in scrutiny etc., is directed towards producing correct trends over time for each industry. The data on remuneration of labour can be regarded as reasonably accurate but in the Output values and Costs of Materials used there are many sources of error which make the use of the much smaller residual aggregate "Remainder of Net Output" suspect for comparison between the individual establishments. Again the individual returns of expenditure on fuel and light (value only) do not readily permit of any check such as those existing between quantities of materials and products, and the inter-establishment variation in this expense may be increased substantially by reporting errors. You will recall that earlier experiments in the double deflation method led to the same conclusion and will remember the abortive efforts we made to interest the Cost and Works Accountants in the provision of more accurate data. You can take us as agreeing to the assertion that the prospects of the survival of Irish industries under E.E.C. conditions should be examined at the establishment, rather than the industry, level. We feel, however, that such examination requires much more accurate and more complete data than that provided by the Census of Production and that only preliminary soundings can be taken using material from that enquiry.

3. In introducing the "Viability" and "Productivity" indexes reference was made to two assumptions or hypotheses, i.e. that "Remainder of Net Output" is proportionately a measure of reward to capital and that expenditure on fuel etc. is a measure of capital utilization. In our opinion, before proceeding to a

fairly large-scale application of the method, both of these assumptions require further examination and proof. In particular the former index, which depends essentially on (a) the ratio of wages and salaries in the individual establishment to expenditure on fuel and light in that establishment, (b) on the ratio of Remainder of Net Output in the establishment to the expenditure on fuel and light in the establishment and (c) on the ratio of the Remainder of Net Output in the industry to the expenditure on fuel and light in the industry, depends on two of the weakest elements in the individual Census of Production returns, expenditure on fuel and light and Remainder of Net Output. The vulnerability of this index is particularly evident if one examines the establishments which are at the top and bottom of the list among the thirty-five establishments in the industry in question.

4. The two establishments giving the highest viability ratings mentioned in your Memorandum (and giving highest net output per £ fuel in light) are concerned with the production of one special line in sugar confectionery. The establishment with the lowest viability rating is, in fact, part of a much larger enterprise. A very large proportion of the output is for further processing in the remainder of the enterprise and the estimated expenditure on fuel and light, in this case, also depends on the costing procedures in the firm itself which we believe to be unreliable. Thus, though the adverse showing is endemic, it may be a function not of relative efficiency or viability but merely of the costing procedures of the concern in question. In fact, a number of the establishments in this industry are parts of enterprises with establishments in other industries in the Census or with distribution activities. This makes it almost impossible to come to any definite conclusions from the individual returns.

5. For certain firms in the selected industry we have obtained, in connection with a recent enquiry, particulars of balance sheets together with valuations, for insurance purposes, of buildings, plant and machinery (excluding vehicles). The statement attached shows, for each complete enterprise, which in a number of cases covers establishments in other industries besides Industry 12, per £ expenditure on fuel and light, (a) the value of fixed assets (using valuation for insurance purposes as indicated above) and (b) the value of fixed assets, as at (a), together with current assets (all stocks, cash and debtors less creditors). It will be seen that there is an extensive range in the values shown though nine concerns (numbered 8-16) give values which are reasonably close together. Admittedly the validity of the series depends on how the insurance valuation is related to the true value but it cannot be denied that the range shown is such as to call for further investigation. As set out in the statement total capital per person engaged also shows considerable variation. The entries opposite numbers 17 and 19 are, however, directly affected by the fact that in the balance sheets in question there is a "nil" entry for buildings - perhaps they were either rented or entirely written off in these cases. We have also included columns to show the Remainder of Net Output expressed as a percentage of Capital and the Remainder of Net Output per £ expenditure on fuel and light.

6. A brief examination of the individual returns for this industry proves, beyond doubt, that any attempt to group establishments into efficiency classes must involve a highly skilled examination of the individual returns. The scrutiny work in question, which is proposed in your document, is not the kind which could be undertaken by the normal clerical staff. It

would be necessary to have an officer of the Statistician grade allocated to the work. Unfortunately, with our present staffing difficulties this would be completely out of the question apart altogether from the fact that we do not consider that the Production records provide suitable material for work of this kind. Fuller financial and other accounts would be essential.

7. An examination of the 1958 returns for a systematic sample of about 40 establishments with very low net output per head has shown clearly the necessity for omitting small (certainly under 10 persons) establishments from any analysis as problems of part-time employment, distribution activity etc. are frequently the cause of peculiar results and usually endemic to the particular establishment.

8. Incidentally, in relation to the classification adopted in Table 1 of your paper, in which the classifier used is cost of materials other than fuel etc., we have examined the effect of using as a classifier total cost of materials and find that keeping the numbers in the groups the same as in your Table 1 there is no change in the actual establishments falling into each group. Since it is much more convenient to classify on the basis of total materials, which is already punched in the cards which have been used for the previous analysis, we feel that this classifier could be used for any further work despite the relatively minor drawback of the lack of algebraic independence.

9. Of the four suggestions which you make on pages 9 and 10 of your document the work on the first two items could, of course, be done fairly readily so far as the arithmetical work is concerned. It would merely require the provision of a special staff to work on the documents. But before envisaging such an undertaking one would need to be assured of the meaningfulness and usefulness of the calculations made. In our view this requires to be established far more thoroughly. There is also the question as to the adequacy of the basic data to provide reasonably reliable estimates of the indices, even if one accepted the hypotheses on which they are based. This latter condition we do not believe to be adequately fulfilled.

10. Your third suggestion is of quite a different order and, as I have said already, requires treatment by a skilled Statistician. I do not see, however, even if we could produce such a person, that a mere examination of the "product-mix" is going to take you very far in the examination of "efficiency". There are many other factors in relation to the establishment which should be considered also. You can take us as being definitely opposed to your fourth suggestion which casts us in the role of pontificating as regards the efficiency of establishments.

Yours sincerely,

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Establishment	Capital per £ Fuel & Light		Final & Current Capital Per Person Engaged	Remainder of Net Output as % of Capital		Remainder of Net output per £ Fuel & Light	
	Fixed	Fixed & Current		Fixed	Fixed & Current		
	£		€000	%	%		
1	(54)*	(84)*	(2.10)*	(28)*	(18)*	(15.1)*	29.2
2	45	64	1.58	33	23		14.8
3	(43)*	(52)*	(3.68)*	(8)*	(7)*	(3.4)*	4.2
4	(37)*	(49)*	(3.43)*	(20)*	(15)*	(7.5)*	7.6
5	35	52	1.61	12	8		4.3
6	31	70	1.91	4	2		1.4
7	31	45	1.97	27	19		8.4
8	22	28	1.20	15	12		3.3
9	22	26	1.79	16	13		3.5
10	(21)*	(31)*	(1.55)*	(24)*	(16)*	(5.0)*	8.1 & 3.3+
11	(20)*	(28)*	(3.10)*	(24)*	(16)*	(4.7)*	7.3
12	19	24	1.52	11	9		2.0
13	19	29	1.96	15	10		2.8
14	17	24	1.22	30	21		4.9
15	16	23	0.91	36	26		6.0
16	16	27	2.10	107	66		17.6
17	7	10	0.40	41	29		2.9
18	6	17	0.61	54	17		3.0
19	5	6	0.19	85	68		3.9

* Enterprise covering establishment (s) in other industries as well.

\+ Two establishments in this enterprise in industry 12.